

REMARKS

In the last Office Action, claim 1 was rejected under 35 U.S.C. §102(b) as being anticipated by Hirane et al. (USP 4,967,192) or Nagumo (USP 6,400,349). Claims 8, 9 and 25-28 were rejected under 35 U.S.C. §103(a) as being unpatentable over Worley et al. (USP 6,486,726) ("Worley").

The Examiner acknowledged receipt of a certified copy of priority Application No. 2001-032261, thereby perfecting applicant's claim for priority based thereon. The Examiner noted that a certified copy of applicant's other priority Application No. 2002-020623 has not been filed and thus the claim for priority based thereon has not been perfected. The Examiner also noted that the filing date of the later-filed priority application does not antedate Worley and Hoshino which, therefore, qualify as references against the present application.

In accordance with this response, independent claims 8 and 9 have been amended to more particularly point out the novel features of the present invention, and dependent claim 27 has been amended to conform the terminology to that used in base claim 9. Claim 10 has been canceled. In view of the foregoing amendments and the previous cancellation of claims 1-7, 11-24 and 29, claims 8, 9 and 25-28 remain pending.

Applicant respectfully requests reconsideration of his application in view of the foregoing amendments and the following discussion.

Amended independent claim 8 is directed to an LED drive circuit comprising a boosting circuit for boosting a power source voltage, a constant current circuit for producing a constant current, a driver circuit for driving an LED with the boosted voltage and the constant current, and a control circuit for controlling the boosting circuit to boost the power source voltage when the constant current is smaller than a predetermined value, and not to boost the power source voltage when the constant current has the predetermined value or more.

Amended independent claim 9 is directed to an LED drive circuit comprising boosting means for boosting a power source voltage, constant current means for producing a constant current, driving means for driving at least two LEDs by the constant current and the boosted voltage, at least two switches connected to respective ones of the LEDs, a switch control circuit for controlling the switches, and means for boosting the voltage when the constant current is smaller than a predetermined value, and for not boosting the voltage when the constant current has the predetermined value or more, such

at least one of the LEDs is periodically turned on and off at certain time intervals in a prime-division manner based on operation of the switch control circuit.

Independent claims 8 and 9 require that the boosting circuit (claim 8) or the boosting means (claim 9) is current-controlled by the constant current produced by the constant current circuit (claim 8) or the constant current means (claim 9) and by such an arrangement, the overall current consumption is reduced without sacrificing the brightness of the LEDs. In contrast, Worley discloses an LED drive circuit having a booster circuit that is voltage-controlled by the voltage of a capacitor, and thus the reference is fundamentally different in construction, operation and effect from that of the present invention.

More particularly, Worley discloses in Fig. 10 an LED driver circuit having a booster circuit comprised of a multi-stage charge pump circuit. Depending on the charge state of a capacitor 1010, an amplifier 1015 outputs a voltage proportional to the charge-up voltage of the capacitor 1010 to boost, or not boost, the power source voltage. See column 12, line 15 through column 13, line 7. Worley does not disclose or suggest controlling the boosting circuit, namely the charge pump circuit, by the constant current of the LED driver circuit as required by independent claims 8 and 9. Thus

unlike the presently claimed invention, in which the boosting circuit is current-controlled, the LED driver circuit of Worley has a boosting circuit that is voltage-controlled and thus the LED driver circuit does not function to reduce current consumption without sacrificing the brightness of the LEDs.

Moreover, it would not have been obvious to one ordinarily skilled in the art to have modified the LED driver circuit of Worley to arrive at the claimed invention. In the absence of some teaching, reason or suggestion in Worley, either alone or in conjunction with any of the other references to record, there is no basis to modify the Worley LED driver circuit to render obvious to presently claimed invention. See, for example, Symbol Technologies, Inc. v. Opticon, Inc., 18USPQ2d 1185 (Fed. Cir. 1991).

In light of the foregoing, the application is now believed to be in allowable form. Accordingly, favorable reconsideration and passage of the application to issue are respectfully requested.

Respectfully submitted,

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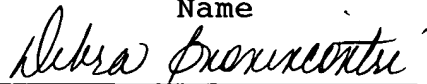
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JUNE 23, 2005

Date